What is a quality improvement project?

This article outlines the why, what and how of quality improvement with the aim of encouraging readers to move 'beyond audit' to undertake high calibre quality improvement projects within their daily work. It also provides a framework for presenting, publishing and disseminating quality improvement findings.

This article heralds a new development in the *British Journal of Hospital Medicine*: a move to include, and hence promote, more high quality audit and quality improvement project reports as part of the range of publications provided for readers. This initial article will help orientate readers to the series of forthcoming publications by providing an overview of quality measurement and quality improvement. The authors want to encourage potential contributors to undertake high calibre quality improvement projects and to present their work in the best way for this and other journals. They outline the why, what and how of quality improvement and quality improvement projects, and how best to publish and disseminate findings which will help to establish a more robust empirical literature to support practitioners and leaders to implement higher quality, more efficient care in their own contexts.

'Everyone in healthcare really has two jobs when they come to work every day: to do their work and to improve it' (Batalden and Davidoff, 2007).

What is quality in health care?

People encounter health care at times of great need and often great uncertainty and distress. The spectrum of health care is very broad: from preventive care in pregnancy and early life to end-of-life care. It spans physical, mental and social dimensions, one-off episodes and lifelong conditions, individuals and communities. Patients, carers, family members, purchasers and providers of different professions may define quality differently for the same condition (Blumenthal, 1996).

How best, then, to define and measure 'quality' in health care? A comprehensive and widely-used framework is that of the American Institute of Medicine (2001), which defines six characteristics of excellent health care: safe, effective, person-centred, timely, efficient and equitable (*Figure 1*). The authors note that often these dimensions are complementary, and developing good quality practice in one domain leads to benefits in others. However, at times there are tensions produced in attempts to improve quality, for example, person-centredness may not always go hand-in-hand with efficiency. In the NHS in England, the *Next Stage Review* (Department of Health, 2008) established a working definition for quality as the triad of patient safety, clinical effectiveness and patient experience. The current coalition government has set out a five-part outcome framework which aims to shift the focus from processes to outcomes (Department of Health, 2011).

Despite quality being complex, multidimensional and meaning different things to different stakeholders, we should not allow this to hold back action to improve the quality of care delivered. For those involved in education, over-theorizing can stifle the development of learning opportunities which would promote practical efforts to improve quality. It is important to also remember that the central aim is not measurement of quality per se, but rather the continuous improvement of quality in ways which matter to patients (Mountford and Davie, 2010): this brings us to quality improvement.

What is quality improvement?

Batalden and Davidoff (2007) define quality improvement as:

'the combined and unceasing efforts of everyone – healthcare professionals, patients and their families, researchers, payers, planners and educators – to make the changes that will lead to better patient outcomes (health), better system performance (care) and better professional development (learning)'.

Good quality improvement therefore is about everyone, every day, doing their job and improving their job.

Figure 1. Six dimensions for quality of care. From Institute of Medicine (2001).

Safe – avoiding causing harm to patients from care that is intended to help them

Effective – providing services based on scientific knowledge and which produce a clear health benefit

Person-centred – providing care that is respectful of or responsive to individuals' needs and values

Timely – reducing waits and harmful delays

Efficient – avoiding waste

Equitable – providing care that does not vary in quality because of a person's characteristics

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Quality improvement interventions

Health systems take society's resources and turn them into activities to improve outcomes and health for patients and populations. 'Quality improvement' refers to a set of techniques and approaches aiming systematically to improve objectively measured quality. Donabedian (1988) introduced the triad of structure, process and outcome: quality improvement activities centre on how to organize structures and processes in order to drive improvements in outcomes over time.

Two academic reviews of quality improvement theory and practice published by the improvement bodies of NHS England and Scotland offer comprehensive analysis of quality improvement methods and success factors (Boaden et al, 2008; Powell et al, 2009). Their findings are broadly consistent and offer important insights into why, to date, quality improvement has delivered dramatic results harnessing powerful advocates at many levels in certain contexts, yet has equally struggled to gain mainstream traction in any health-care system internationally.

The reviews identify seven basic methods, all with roots in industrial theory, which have been championed by well-known organizations like GE and Toyota: total quality management, business process reengineering, lean, six sigma, mass customisation, theory of constraints and rapid cycle change. The latter, sometimes known as 'PDSA cycles' for the model's basic framework (plan-do-study-act) (Langley et al, 2009), is probably best known in the UK since it is the model developed by the Institute for Healthcare Improvement (Health Foundation, 2011). The Institute for Healthcare Improvement has been particularly influential in driving quality improvement theory and practice in the NHS by guiding the work of NHS improvement agencies and other organizations.

These methods all have overlapping histories and similar aims, tools and techniques at their heart. All focus on structures, processes, flow, measurement and management of variation, combined with harnessing front-line leadership and a focus on improvement from the patient (or customer) perspective. To succeed over time and beyond individual projects, all must be underpinned by strong IT systems (to provide relevant, timely data in a usable form) and investment in a coherent package of training and development for clinical and managerial staff, ideally from 'board to ward', which successfully engages across professions. Suggestions for further reading and practice points are shown in *Figure 2*.

Building and sustaining momentum for quality improvement in health care

The central problem here is that while all these approaches to quality improvement work some of the time (and may work very well in certain circumstances), each at the same time has rarely delivered the step-changes in performance expected or claimed. Success depends on a set of factors at local, professional, organizational and health system levels (Locock, 2003). Organizations which have made the most of applying quality improvement in health care, as in other industries, have picked one method and stuck with it stably over many years, embedding that method into organizational culture. They have made continuous improvement the responsibility of all staff, not the responsibility of a separate 'quality directorate' (Powell et al, 2009; Bohmer, 2010). They have put quality improvement at the heart of organizational strategy, invested in information and knowledge management systems and training, linking this to addressing real-life clinical challenges which matter to individuals and the organization. Successful organizations have found and nurtured champions in each profession, and empowered staff to persevere over time.

The challenge is further complicated by the historical and cultural roots of medicine as a profession. In short, medicine and surgery have developed primarily as 'craft-based' pursuits, with a culture which emphasizes individuals over teams, has resisted systematization, standardization and objective measurement (and, too often, error disclosure and learning) (Institute of Medicine, 2001; Leape and Berwick, 2005). In the NHS, this thinking began to shift in the last decades of the 20th century and can be linked to the Department of Health (1989) mandating clinical audit. In more

Figure 2. Further reading and practice points.

Many studies have found that a focus on measuring and improving quality is a core characteristic of the highest performing organizations and systems (Bohmer, 2010; Render et al, 2011)

Measurement has highlighted serious quality shortcomings in all health systems. For example, a 2003 review of routine procedures in the USA such as joint replacement and heart attack care showed shortcomings in the quality of care delivered *vs* the standard of care suggested by clinical evidence in over 40% of patients (McGlynn et al, 2003). A 2001 analysis of harm in NHS (Vincent et al, 2001) showed that 10% of patients routinely admitted to NHS hospitals suffer harm of some kind, with up to a third being classified as serious and at least half preventable

Growing awareness of current gaps in quality and safety, and the potential to achieve substantially higher performance for patients, has led to widespread efforts to improve quality and safety, at national and local level: for example, in the USA the 100 000 lives campaign, in the NHS the Scottish Patient Safety Campaign and the 1000 lives campaign in Wales, and the 'Matching Michigan' initiative aiming to replicate dramatic improvements in catheter-associated bloodstream infections achieved in American intensive care units

A number of methods used for quality improvement have been developed in industry and are now deployed in health care, for example total quality management, business process reengineering, lean, six sigma, mass customisation, plan-do-study-act. For an introductory text on these and their application in health care see Boaden et al (2008) and Powell et al (2009)

Alongside the growing understanding of the value of undertaking quality improvement projects there has been a developing acceptance of how best to report these findings, for example the SQUIRE guidelines (Standards for QUality Improvement Reporting Excellence, 2008)

recent years it is possible to trace how this new understanding has evolved from audit, through clinical guidelines, care pathways and clinical governance to the current emphasis on continuous quality improvement (Berwick et al, 1992; Grimshaw et al, 2004; Boaden et al, 2008).

The final factor holding back widespread adoption of quality improvement activities is the dominance of a biomedical model for what is considered 'good evidence'. Health care is an industry where evidence matters and where the 'gold standard' of evidence comes in the form of the double-blind randomized controlled trial. While randomized controlled trials in improvement are possible in some circumstances, they are often neither feasible nor even desirable (Berwick, 2008). Quality improvement work is about real-life implementation. Many variables are considered at once, and variation beyond the variable under test cannot typically be randomized outwith larger sample sizes. Therefore the standard and nature of 'evidence' that emerges from improvement research is inherently different to that from biomedical research. Research design and evaluation methodologies very different to randomized controlled trials may be appropriate, such as realistic evaluation (Pawson and Tilley, 1997). Rigorous improvement work often leads to conclusions which themselves are context-dependent. This, combined with the overall complexity of improvement research and other factors, has too often led to improvement research failing to engage the mainstream. The authors believe the new interest in quality improvement in the health-care literature and health-care education can play an important part in addressing this issue.

Table 1. SQUIRE (Standards for QUality Improvement Reporting Excellence) publication guidelines

Title	Indicates the article concerns the improvement of quality
	States the specific aim of the intervention
	Specifies the study method used
Abstract	
Introduction: why did you start?	Background knowledge and literature
	Local problem
	Intended improvement (what, who and why now)
	Study question(s)
Methods: what did you do?	Ethical issues
	Setting
	Planning the intervention
	Planning the study of the intervention including study design, instruments, procedures, outcomes to be measured, methodological issues and problems, analysis methods used
Results: what did you find?	Outcomes (including benefits, harms, unexpected results, problems, failures, missing data)
Discussion: what do the findings mean?	Summary
	Relation to other evidence
	Limitations (including factors that could affect generalizability)
	Interpretation
	Conclusions
Other information	Factors relevant to conduct and interpretation of the study
	Funding design, implementation, interpretation, and publication of study

From Standards for QUality Improvement Reporting Excellence (2008)

Why undertake quality improvement work?

The simplest answer to this question is that for anyone working in health care, whose purpose – whether clinician of any type or manager – should centre on progressively improving results for patients and populations, making quality improvement part of daily work becomes a natural part of one's professional ethic. As Batalden and Davidoff (2007) put it:

> **'Healthcare will not realise its full potential unless change making becomes an intrinsic part of everyone's job, every day, in all parts of the system'.**

A second answer is that engaging in quality improvement is rapidly becoming an imperative for clinicians through the requirements of professional bodies and licensing. In the last decade, measuring and improving quality has become central to formal professional and educational requirements for medicine in the UK. For example, the General Medical Council has included skills to measure and improve quality of care as a core part of the professional competences for all doctors (General Medical Council, 2006, 2012) and a required part of undergraduate curricula (General Medical Council, 2009).

A third answer is that quality improvement is gaining increased academic legitimacy. The *British Journal of Hospital Medicine* is not alone in recognizing that the time is right to focus on quality improvement. Outputs from improvement projects have begun to achieve publication in journals with the highest impact factors, for example the *New England Journal of Medicine* for the World Health Organization surgical checklist (Haynes et al, 2009). A quality improvement project in India was not only published in *The Lancet* but won the Society for Clinical Trials' 'Trial of the Year' award (Tripathy et al, 2010). There is much interest in developing a 'science of improvement', a highly multidisciplinary and practice-oriented partner to evidence-based medicine, concerned with rigorous research toward understanding issues of real-life implementation across diverse care settings and in communities (Berwick, 2008).

A fourth and final answer is that engaging in quality improvement efforts can be highly rewarding, both personally and professionally: not only can quality improvement lead to better results for patients, but many quality

improvement efforts also improve working relationships, professional satisfaction and working arrangements for staff. They can also help bridge the clinician–manager divide (Ahmed-Little et al, 2011; Bethune, 2011; Roueche and Hewitt, 2012).

Disseminating quality improvement

There are two important channels in which quality improvement projects need to be reported: first, locally, persuasively and persistently to members of our own institutions and communities of practice and second, and more formally, through dissemination to a wider audience through publication. Here, the authors focus on the second, mindful of the first.

Most are familiar with the traditional approach to writing up research: the IMRAD model (introduction, methods, results, discussion). However, those who have tried to write up a quality improvement project for publication are often frustrated by the limitations of this model. While IMRAD works for some types of quality improvement project, the richness of description required, the context-specific nature of both problems and interventions and the often cyclical (rather than linear) nature of the work means that alternative approaches are needed for writing up this work. The SQUIRE model (Standards for QUality Improvement Reporting Excellence) has been put forward as a better way of presenting such projects (Moss and Thomson, 1999; Davidoff et al, 2008). SQUIRE demands a more descriptive approach that focuses on why you started, what you did, what you found and what these findings might mean, ending with a clear indication of contextual factors relevant to the conduct and interpretation of the findings (and thus affecting generalizability). *Table 1* gives more details.

The importance of writing about quality and quality improvement should not be underestimated. On a personal level it forces doctors to sharpen their assumptions and hypotheses, to be explicit about their methods and thoughtful about how their work relates to previous knowledge and experience. It also prompts doctors to reflect on their inferences and observations. At a local practice level it validates their efforts and creates a 'memory' about how practices have come to be. At a wider level, writing encourages doctors to share their work, helping disseminate ideas and techniques which support the provision of better quality care across organizations and practitioner communities. It also creates a historical record which traces the development of quality improvement knowledge and practice.

Conclusions

As practitioners, educators and researchers with a passion both for quality improvement as an endeavour and for the sharing of good practice in quality improvement, we look forward to contributions from a range of authors across the health professions: practitioners, managers, academics and policy makers. Together we can all contribute to and learn from this growing empirical and theoretical field. In so doing, we will contribute to improving outcomes, experiences and efficiency for the patients we serve. **BJHM**

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KEY POINTS

- Quality improvement involves systematic attempts to improve the quality of health care delivered to patients with the aim of improving relevant outcomes and experience. In the right circumstances, quality improvement methods can lead to dramatic and sustainable improvements in outcomes for patients.
- Quality improvement produces new knowledge, skills and practices, with a focus on increasing reliability in care processes and on learning.
- A range of quality improvement methods are available and used in health care. These methods have their roots in other industries. None is intrinsically better than others. To be successful, all methods require a set of individual and organizational characteristics to be present and sustained over time.
- Well-conducted quality improvement projects can have a profound effect on local practice. Although a range of individual quality improvement projects will typically be going on within an organization at any one time, in the best organizations quality improvement is about much more than a set of projects. Rather, it represents the collective desire, consistently reinforced, to improve a wide range of outcomes that matter to patients.
- Meaningful quality improvement is increasingly becoming a practical and professional imperative for individual professionals and organizations. At its heart, quality improvement is about both doing today's work and improving today's work.
- Well-written quality improvement reports can have a broader dissemination and therefore more widespread effect. The opportunities for publishing quality improvement work in journals of various types are increasing.

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